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(54) **PATENT MAPPING**

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This patent is subject to a terminal disclaimer.

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G06F 17/30	(2006.01)
G06Q 30/02	(2012.01)
G06Q 50/22	(2012.01)

(52) **U.S. Cl.**

CPC ***G06F 17/30734*** (2013.01); ***G06F 17/30657*** (2013.01); ***G06F 17/30705*** (2013.01); ***G06F 17/30728*** (2013.01); ***G06Q 30/0207*** (2013.01); ***G06Q 50/22*** (2013.01); *G06F 2216/11* (2013.01)

(58) **Field of Classification Search**

CPC G06F 17/30684; G06F 17/30011; G06F 2216/11; G06F 17/2785; G06F 17/30731; G06F 17/30734; G06F 17/30737; G06F 17/2795; G06F 17/30657; G06F 17/30705; G06F 17/30728; G06F 17/30; G06F 3/0687; G06Q 50/18; G06Q 50/22; G06Q 30/0207; Y10S 707/99933

USPC 707/706, 770, 791, 797, 736, E17.045, 707/E17.108, E17.014, E17.009, 722, 740, 707/E17.046, E17.059; 715/200, 234, 254, 715/255; 705/1.1, 2, 14.1, 400, 1; 706/58; 704/9

See application file for complete search history.

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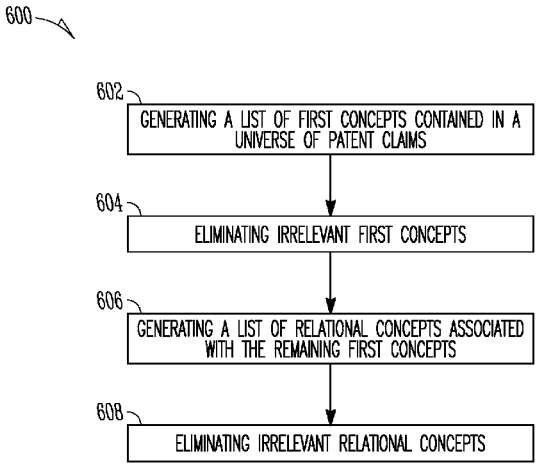
(57) **ABSTRACT**

The present subject matter provides systems, methods, software, and data structures for patent mapping, storage, and searching. Some such embodiments include mapping patent documents, claims, and claim limitations. Some further embodiments provide for searching a universe of patent documents by patent document, claim, limitation, class, element, or concept.

9 Claims, 18 Drawing Sheets



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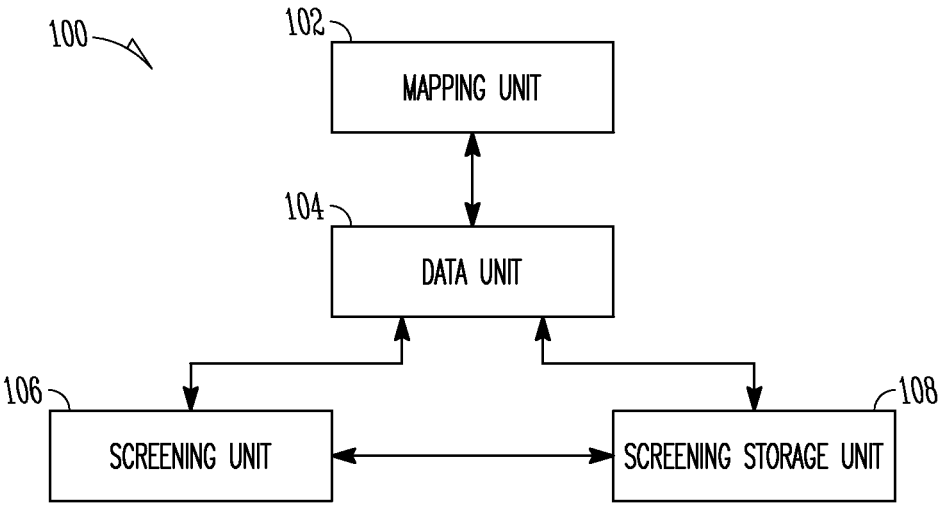
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SCREENING UNIT
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SCREENING STORAGE UNIT

FIG. 1

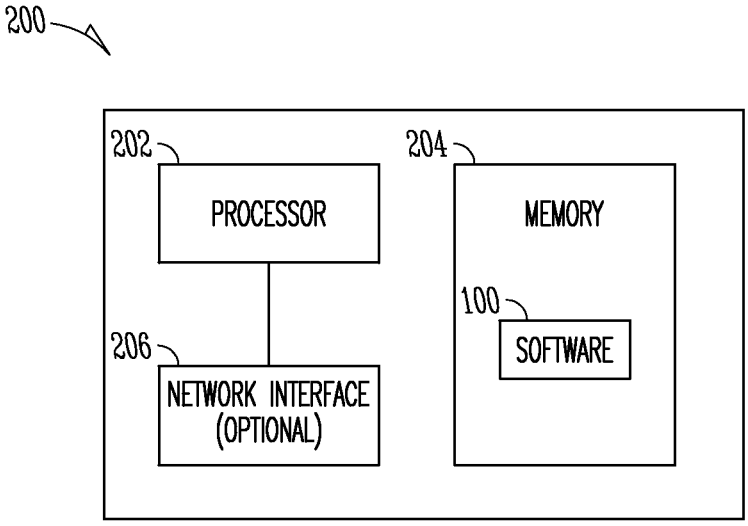
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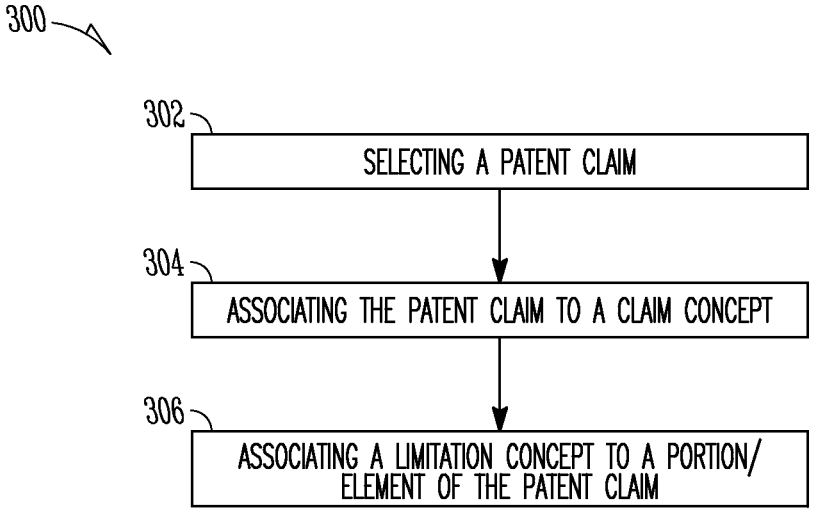
FIG. 2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ASSOCIATING A LIMITATION CONCEPT TO A PORTION/ ELEMENT OF THE PATENT CLAIM

FIG. 3

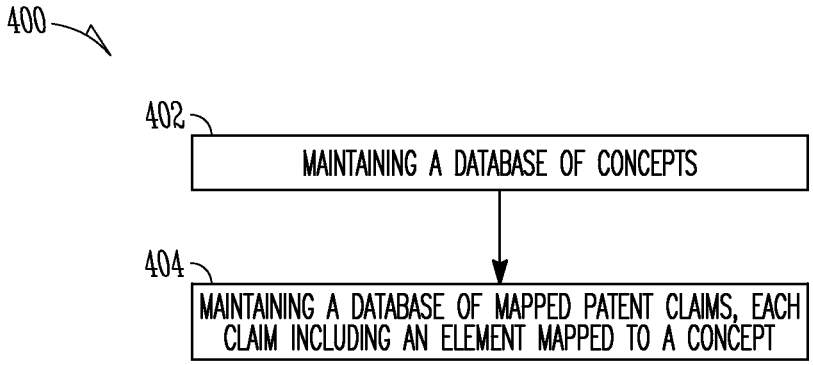
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FIG. 4

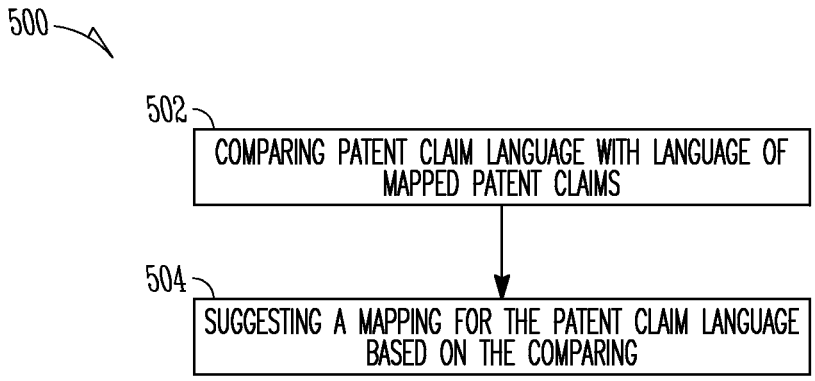
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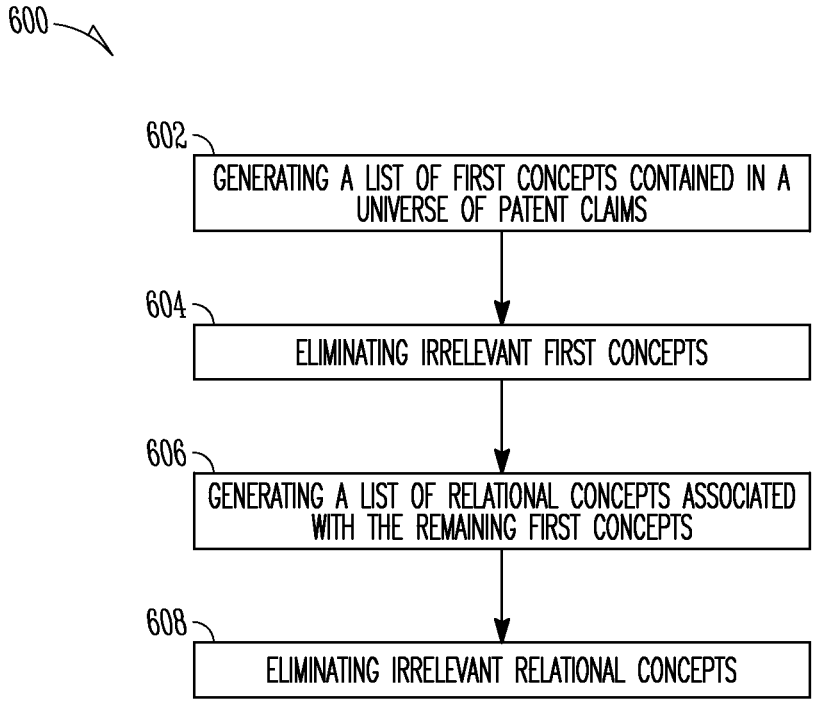
FIG. 5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ELIMINATING IRRELEVANT FIRST CONCEPTS
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GENERATING A LIST OF RELATIONAL CONCEPTS ASSOCIATED WITH THE REMAINING FIRST CONCEPTS
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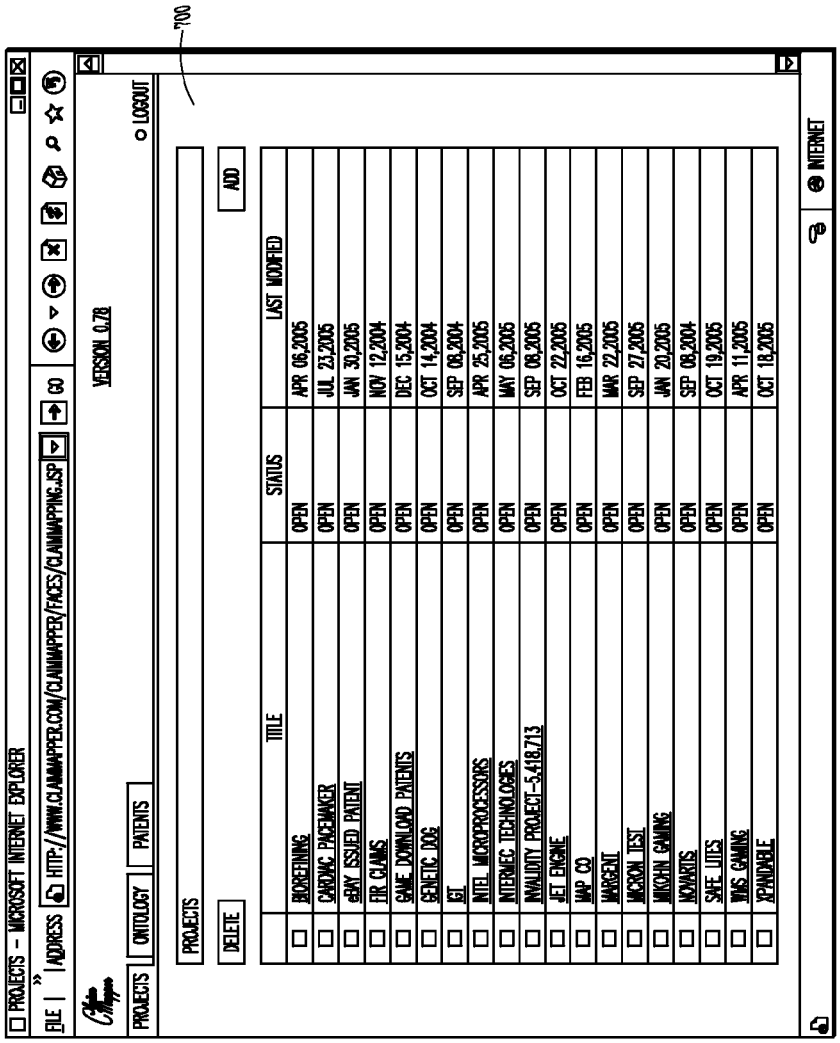
ELIMINATING IRRELEVANT RELATIONAL CONCEPTS

FIG. 6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JET OPEN SEP 09,2004
INTEL MICROPROCESSORS OPEN APR 25,2005
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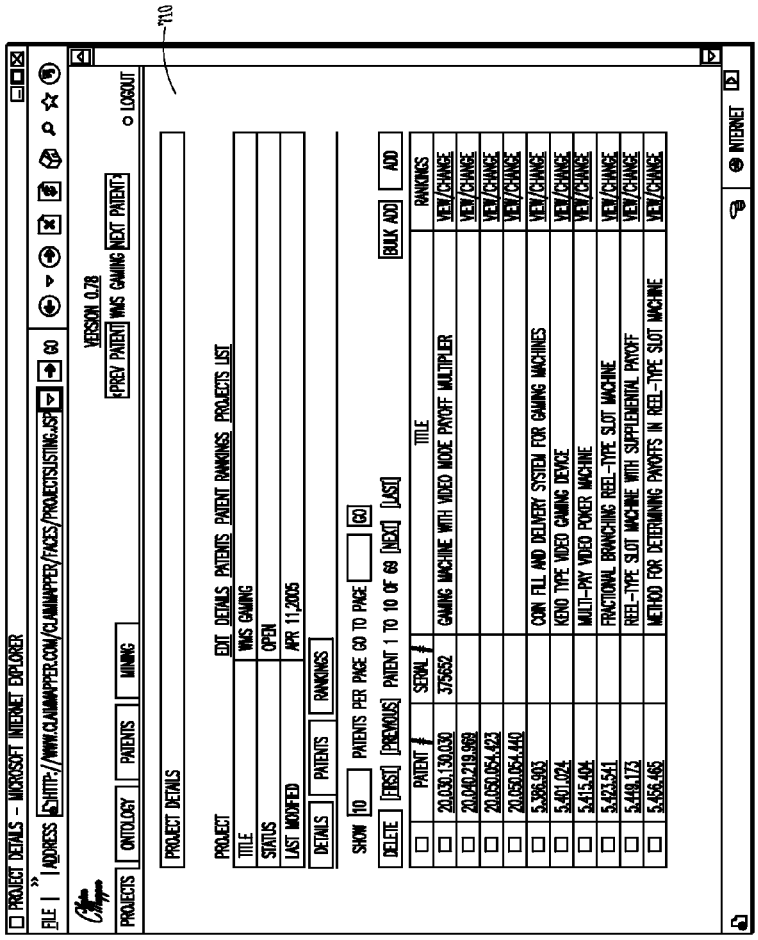
FIG. 7A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VIEW/CHANGE
20.050.054.440
VIEW/CHANGE
5.386.903
COIN FILL AND DELIVERY SYSTEM FOR GAMING MACHINES
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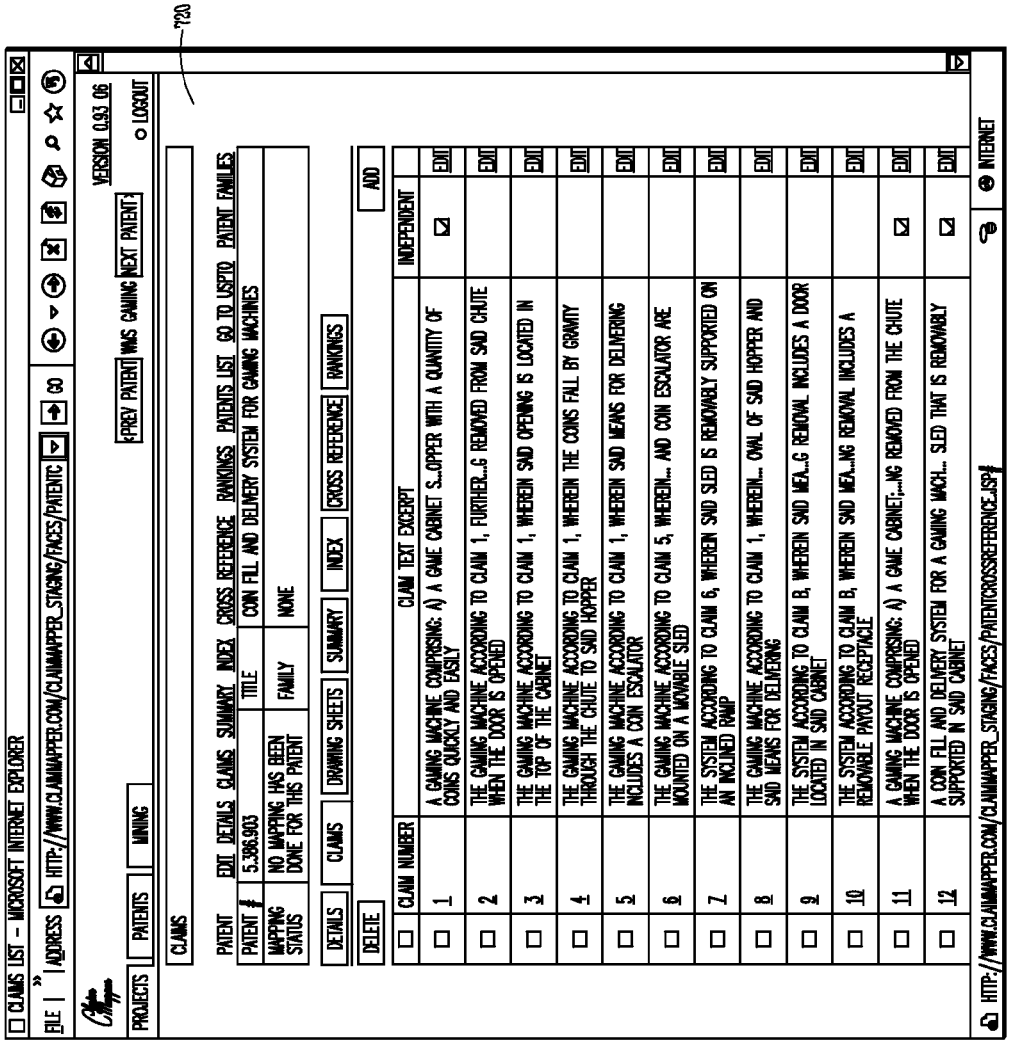
KENO TYPE VIDEO GAMING DEVICE
VIEW/CHANGE
5.415.404
MULTI-PAY VIDEO POKER MACHINE
VIEW/CHANGE
5.423.541
FRACTIONAL BRANCHING REEL-TYPE SLOT MACHINE
VIEW/CHANGE
5.449.173
REEL-TYPE SLOT MACHINE WITH SUPPLEMENTAL PAYOFF
VIEW/CHANGE
5.456.465
METHOD FOR DETERMINING PAYOFFS IN REEL-TYPE SLOT MACHINE
VIEW/CHANGE
INTERNET

FIG. 7B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PATENT # 5,386,903 TITLE COIN FILL AND DELIVERY SYSTEM FOR GAMING MACHINES
MAPPING STATUS NO MAPPING HAS BEEN DONE FOR THIS PATENT FAMILY NONE
DETAILS CLAIMS DRAWING SHEETS SUMMARY INDEX CROSS REFERENCE RANKINGS
DELETE ADD
CLAIM NUMBER CLAIM TEXT EXCERPT INDEPENDENT
1 A GAMING MACHINE COMPRISING: A) A GAME CABINET S...OPPER WITH A QUANTITY OF COINS QUICKLY AND EASILY EDIT
2 THE GAMING MACHINE ACCORDING TO CLAIM 1, FURTHER...G REMOVED FROM SAID CHUTE WHEN THE DOOR IS OPENED EDIT
3 THE GAMING MACHINE ACCORDING TO CLAIM 1, WHEREIN SAID OPENING IS LOCATED IN THE TOP OF THE CABINET EDIT
4 THE GAMING MACHINE ACCORDING TO CLAIM 1, WHEREIN THE COINS FALL BY GRAVITY THROUGH THE CHUTE TO SAID HOPPER EDIT
5 THE GAMING MACHINE ACCORDING TO CLAIM 1, WHEREIN SAID MEANS FOR DELIVERING INCLUDES A COIN ESCALATOR EDIT
6 THE GAMING MACHINE ACCORDING TO CLAIM 5, WHEREIN... AND COIN ESCALATOR ARE MOUNTED ON A MOVABLE SLED EDIT
7 THE SYSTEM ACCORDING TO CLAIM 6, WHEREIN SAID SLED IS REMOVABLY SUPPORTED ON AN INCLINED RAMP EDIT
8 THE GAMING MACHINE ACCORDING TO CLAIM 1, WHEREIN... OVAL OF SAID HOPPER AND SAID MEANS FOR DELIVERING EDIT
9 THE SYSTEM ACCORDING TO CLAIM 8, WHEREIN SAID MEA...G REMOVAL INCLUDES A DOOR LOCATED IN SAID CABINET EDIT
10 THE SYSTEM ACCORDING TO CLAIM 8, WHEREIN SAID MEA...NG REMOVAL INCLUDES A REMOVABLE PAYOUT RECEPTACLE EDIT
11 A GAMING MACHINE COMPRISING: A) A GAME CABINET;...NG REMOVED FROM THE CHUTE WHEN THE DOOR IS OPENED EDIT
12 A COIN FILL AND DELIVERY SYSTEM FOR A GAMING MACH... SLED THAT IS REMOVABLY SUPPORTED IN SAID CABINET EDIT
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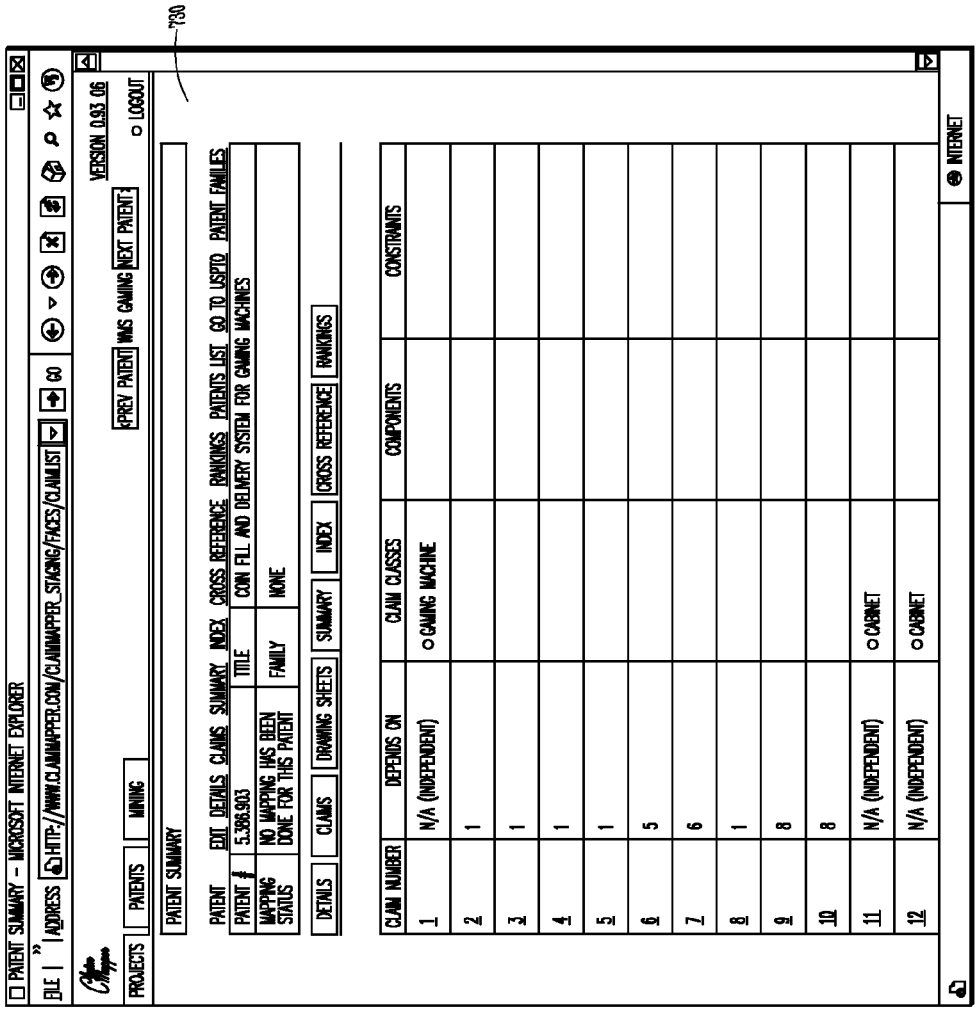
FIG. 7C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MAPPING STATUS NO MAPPING HAS BEEN DONE FOR THIS PATENT FAMILY NONE
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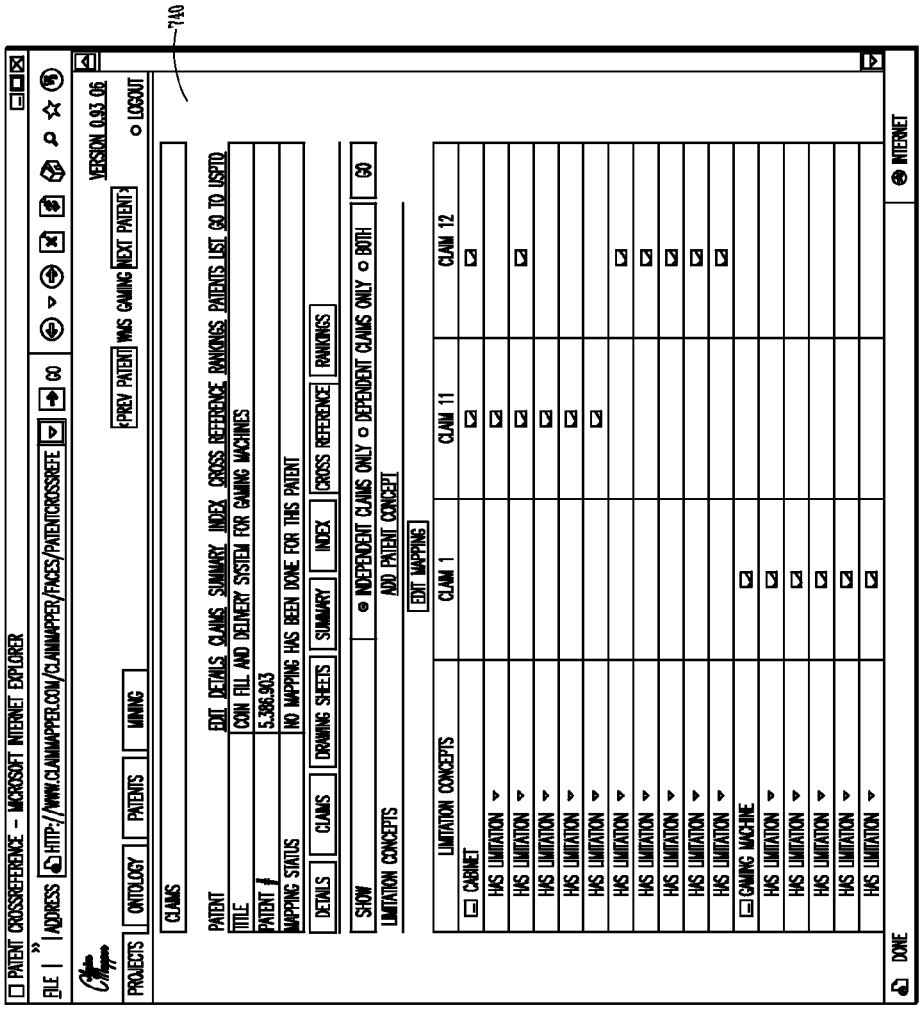
1 N/A (INDEPENDENT) GAMING MACHINE
2 1
3 1
4 1
5 1
6 5
7 6
8 1
9 8
10 8
11 N/A (INDEPENDENT) CABINET
12 N/A (INDEPENDENT) CABINET
INTERNET

FIG. 7D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TITLE COIN FILL AND DELIVERY SYSTEM FOR GAMING MACHINES
PATENT # 5,366,903
MAPPING STATUS NO MAPPING HAS BEEN DONE FOR THIS PATENT
DETAILS CLAIMS DRAWING SHEETS SUMMARY INDEX CROSS REFERENCE RANKINGS
SHOW INDEPENDENT CLAIMS ONLY DEPENDENT CLAIMS ONLY BOTH GO
LIMITATION CONCEPTS ADD PATENT CONCEPT
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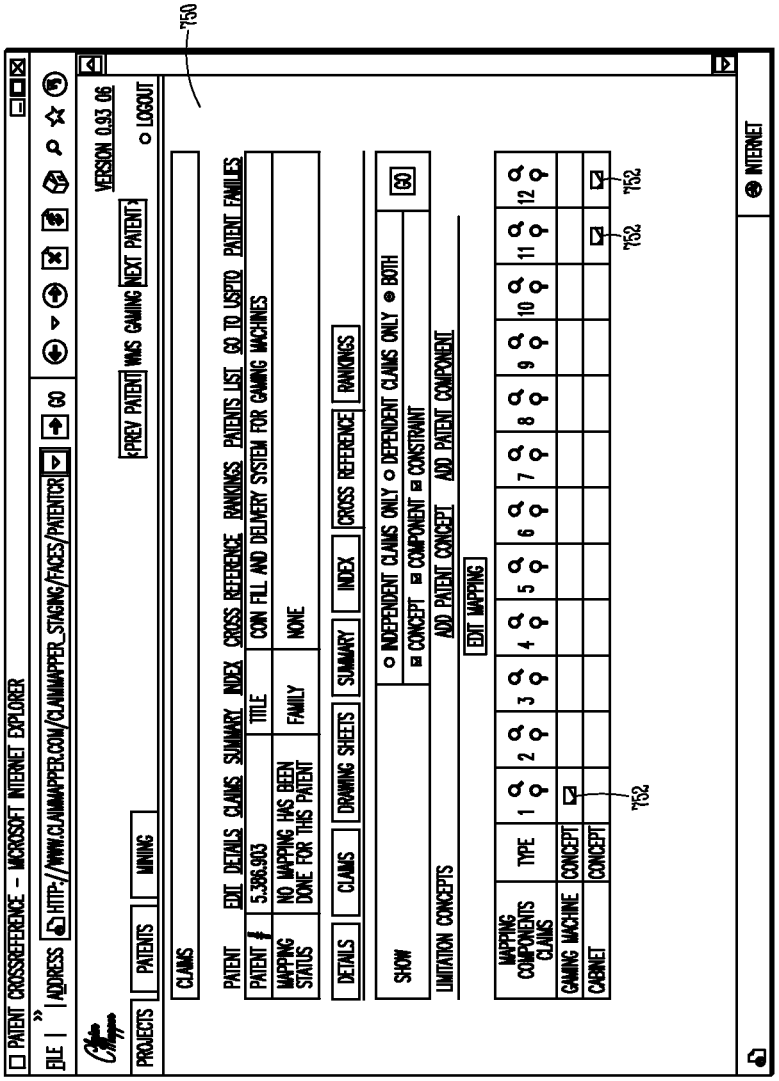
HAS LIMITATION
GAMING MACHINE
DONE INTERNET

FIG. 7E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EDIT MAPPING
MAPPING COMPONENTS CLAIMS
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CABINET CONCEPT
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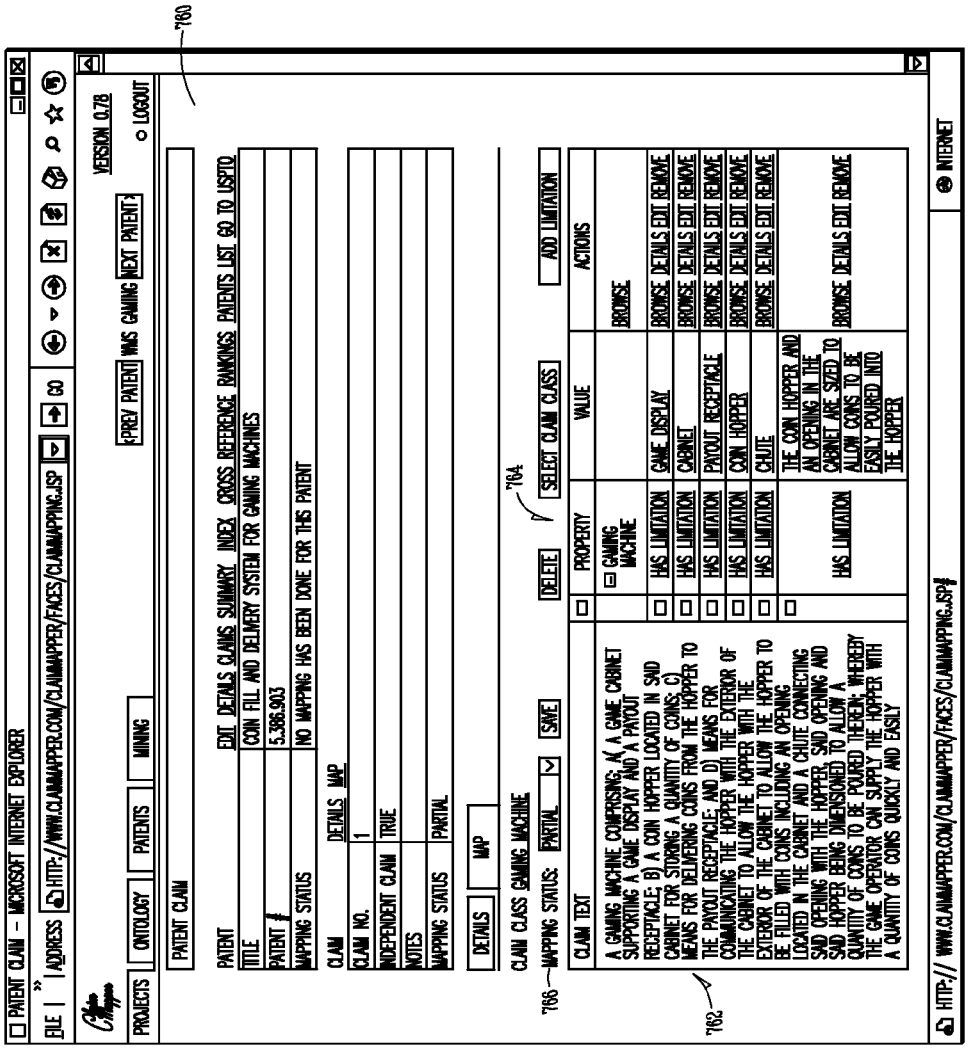
FIG. 7F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PATENT # 5,386,903
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CLAIM NO. 1
INDEPENDENT CLAIM TRUE
NOTES
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DETAILS MAP
CLAIM CLASS GAMING MACHINE
766 MAPPING STATUS: PARTIAL SAVE DELETE 764 SELECT CLAIM CLASS ADD LIMITATION
762
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PROPERTY VALUE ACTIONS
GAMING MACHINE BROWSE
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HAS LIMITATION PAYOUT RECEPTACLE BROWSE DETAILS EDIT REMOVE
HAS LIMITATION COIN HOPPER BROWSE DETAILS EDIT REMOVE
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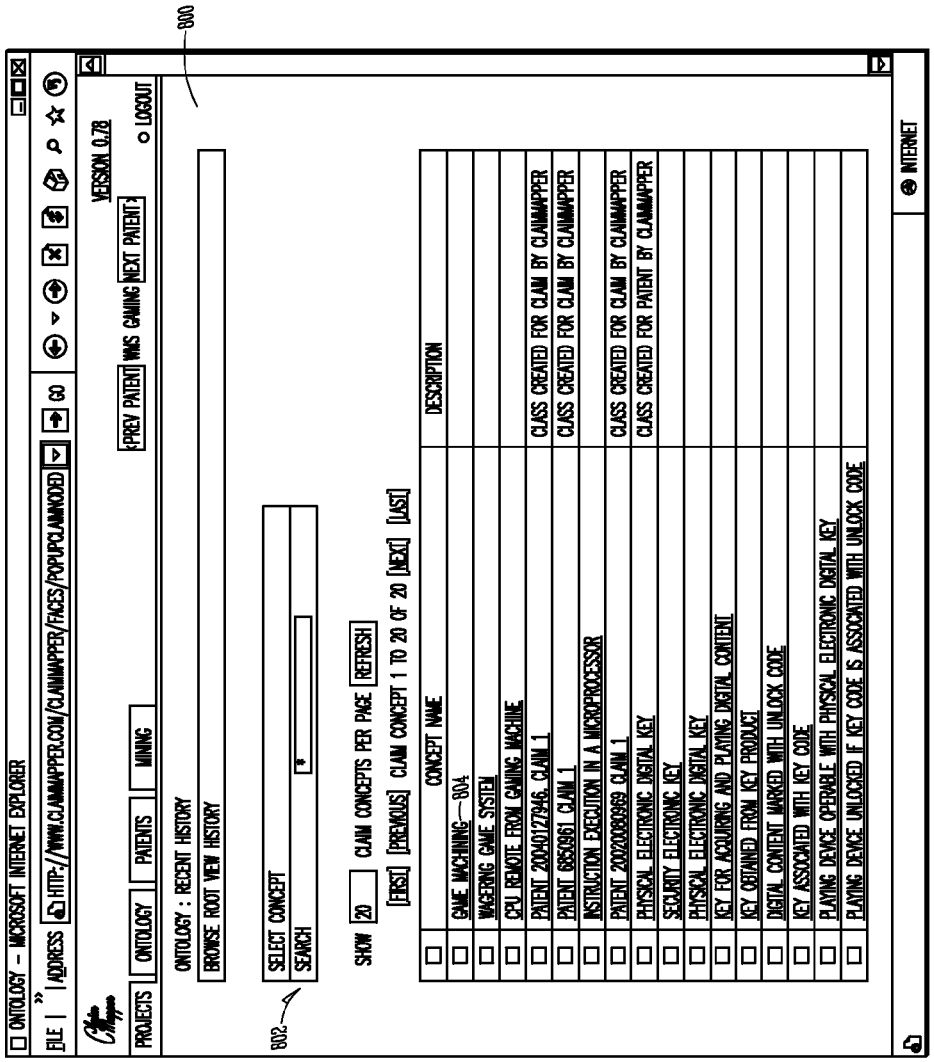
FIG. 7G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DESCRIPTION
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WAGERING GAME SYSTEM
CPU REMOTE FROM GAMING MACHINE
PATENT 20040127946, CLAIM 1
CLASS CREATED FOR CLAIM BY CLAIMMAPPER
PATENT 6850961 CLAIM 1
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INSTRUCTION EXECUTION IN A MICROPROCESSOR
PATENT 20020089969 CLAIM 1
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PHYSICAL ELECTRONIC DIGITAL KEY
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DIGITAL CONTENT MARKED WITH UNLOCK CODE
KEY ASSOCIATED WITH KEY CODE
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PLAYING DEVICE UNLOCKED IF KEY CODE IS ASSOCIATED WITH UNLOCK CODE
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FIG. 8A

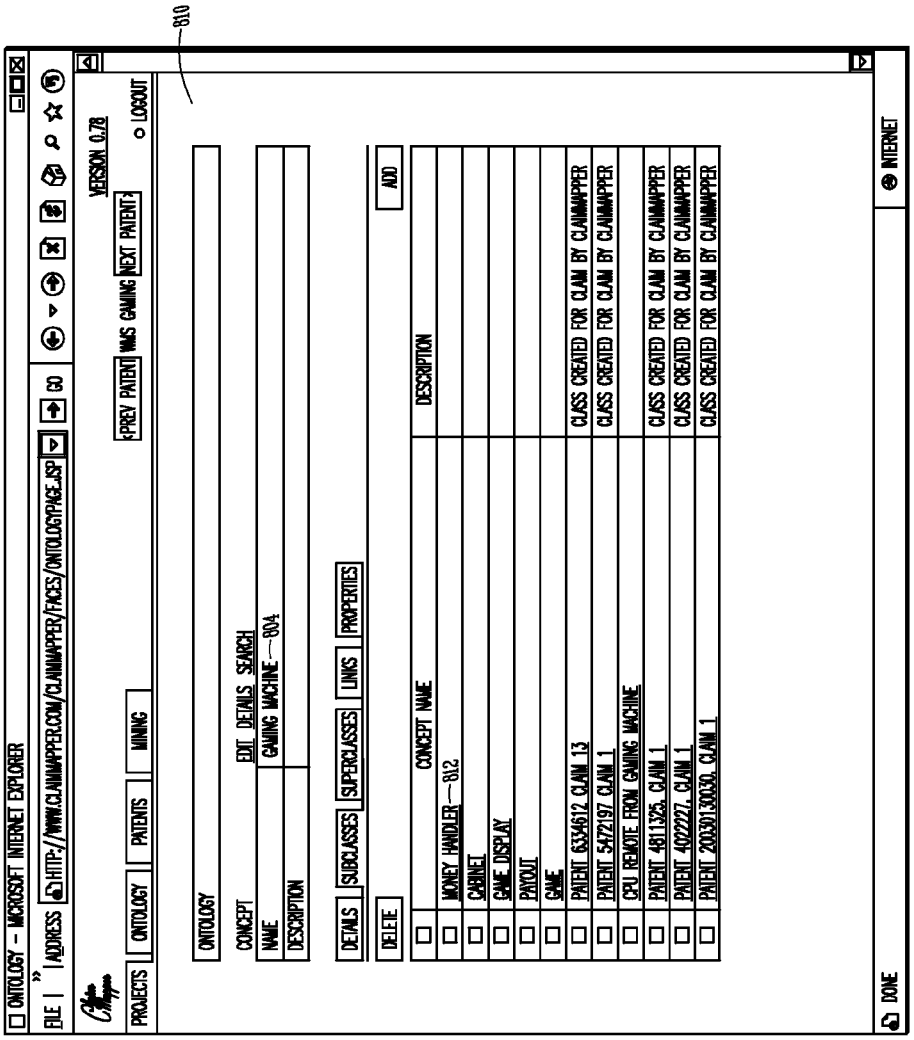
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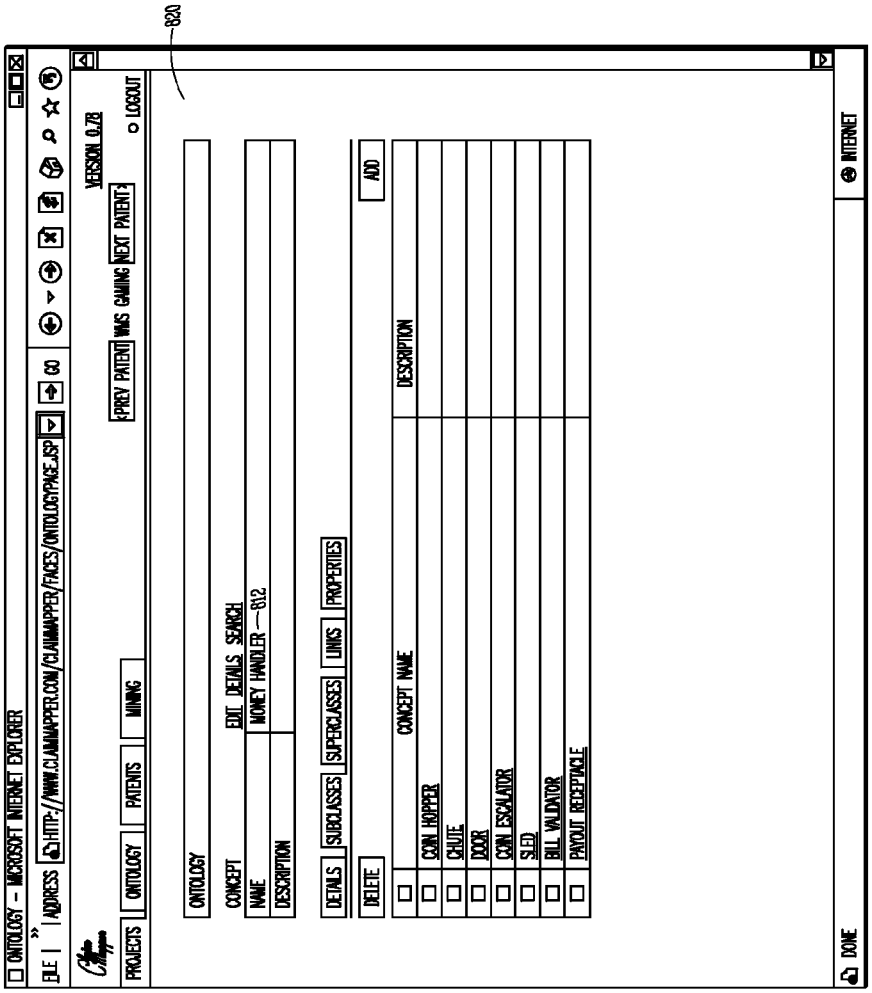
FIG. 8B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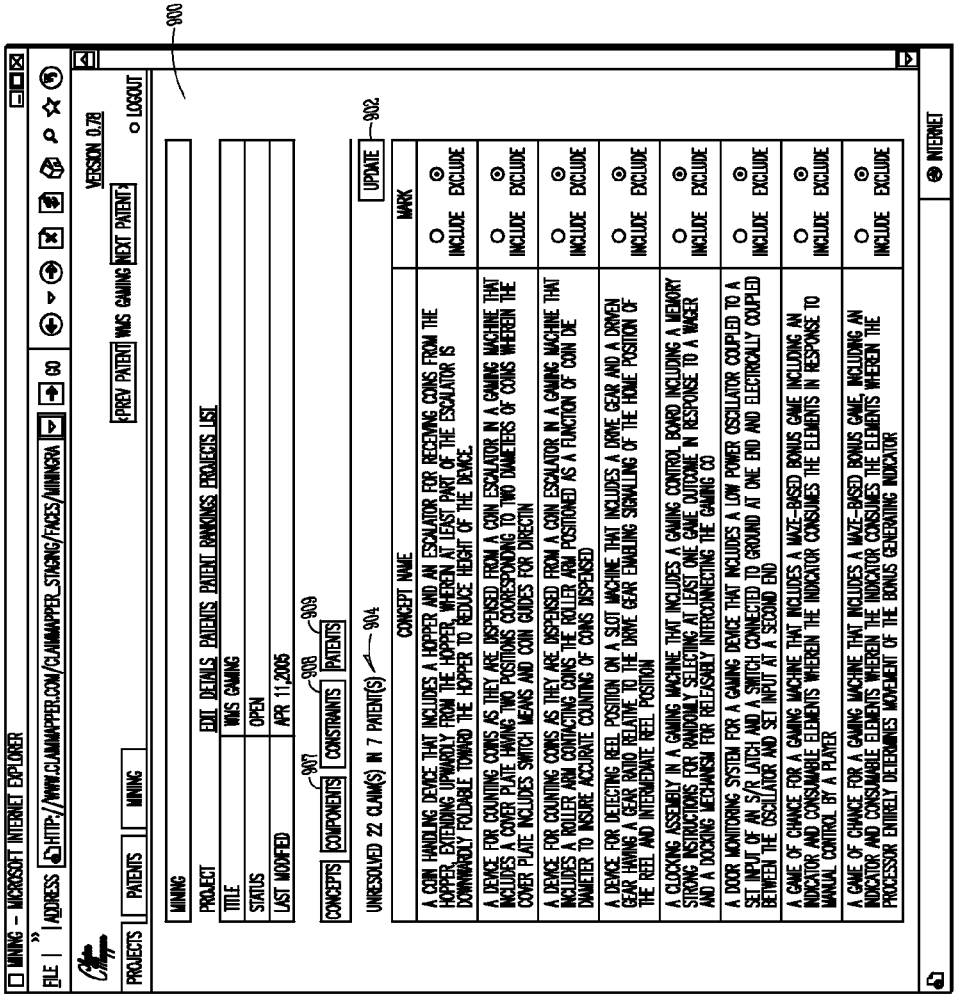
NAME MONEY HANDLER —812
DESCRIPTION
DETAILS SUBCLASSES SUPERCLASSES LINKS PROPERTIES
DELETE
ADD
CONCEPT NAME
DESCRIPTION
COIN HOPPER
CHUTE
DOOR
COIN ESCALATOR
SLED
BILL VALIDATOR
PAYOUT RECEPTACLE
DONE
INTERNET

FIG. 8C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MINING
PREV PATENT
WMS GAMING
NEXT PATENT
LOGOUT
900
MINING
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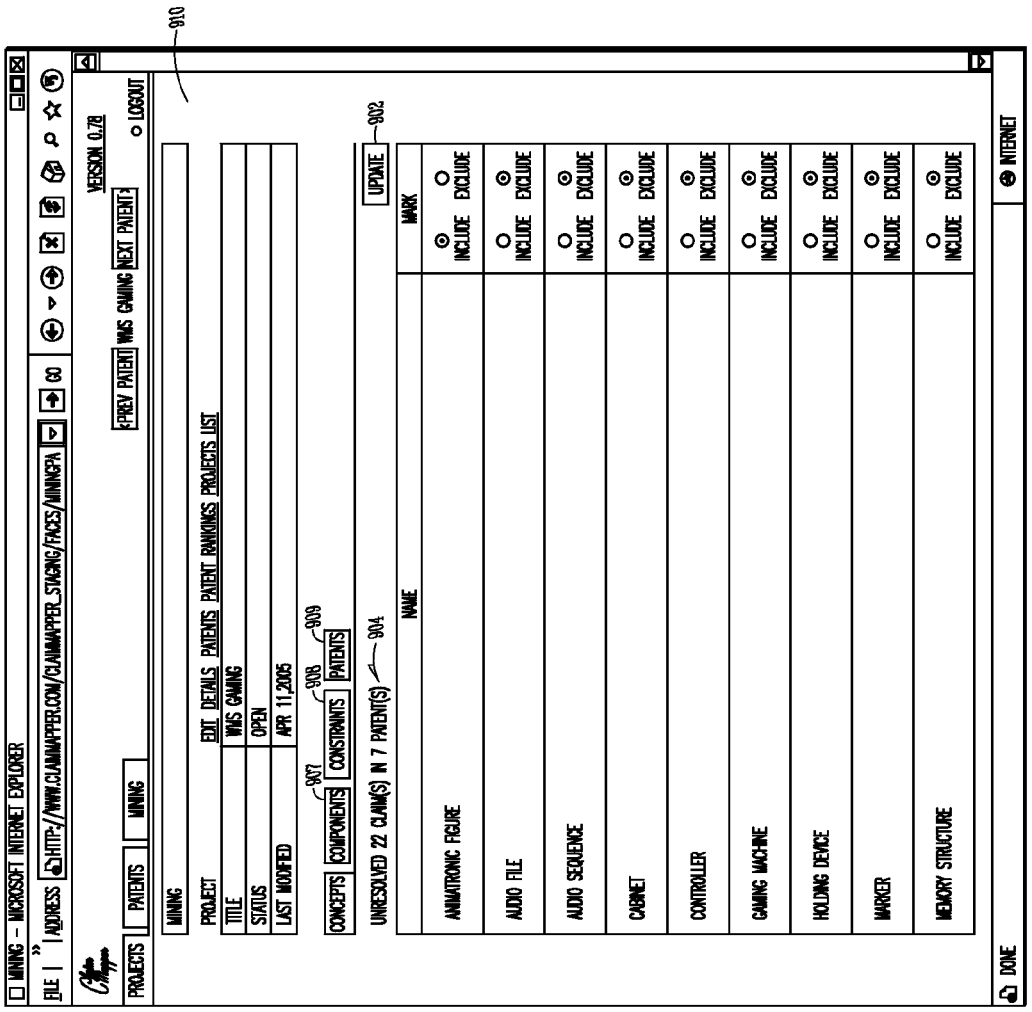
EDIT DETAILS PATENTS PATENT RANKINGS PROJECTS LIST
TITLE
WMS GAMING
STATUS
OPEN
LAST MODIFIED
APR 11,2005
CONCEPTS
COMPONENTS
CONSTRAINTS
PATENTS
907
908
909
UNRESOLVED 22 CLAIM(S) IN 7 PATENT(S)
904
UPDATE
902
CONCEPT NAME
MARK
A COIN HANDLING DEVICE THAT INCLUDES A HOPPER AND AN ESCALATOR FOR RECEIVING COINS FROM THE HOPPER, EXTENDING UPWARDLY FROM THE HOPPER, WHEREIN AT LEAST PART OF THE ESCALATOR IS DOWNWARDLY FOLDABLE TOWARD THE HOPPER TO REDUCE HEIGHT OF THE DEVICE.
A DEVICE FOR COUNTING COINS AS THEY ARE DISPENSED FROM A COIN ESCALATOR IN A GAMING MACHINE THAT INCLUDES A COVER PLATE HAVING TWO POSITIONS COORESPONDING TO TWO DIAMETERS OF COINS WHEREIN THE COVER PLATE INCLUDES SWITCH MEANS AND COIN GUIDES FOR DIRECTIN
A DEVICE FOR COUNTING COINS AS THEY ARE DISPENSED FROM A COIN ESCALATOR IN A GAMING MACHINE THAT INCLUDES A ROLLER ARM CONTACTING COINS THE ROLLER ARM POSITIONED AS A FUNCTION OF COIN DIE DIAMETER TO INSURE ACCURATE COUNTING OF COINS DISPENSED
A DEVICE FOR DETECTING REEL POSITION ON A SLOT MACHINE THAT INCLUDES A DRIVE GEAR AND A DRIVEN GEAR HAVING A GEAR RATIO RELATIVE TO THE DRIVE GEAR ENABLING SIGNALLING OF THE HOME POSITION OF THE REEL AND INTERMEDIATE REEL POSITION
A CLOCKING ASSEMBLY IN A GAMING MACHINE THAT INCLUDES A GAMING CONTROL BOARD INCLUDING A MEMORY STRONG INSTRUCTIONS FOR RANDOMLY SELECTING AT LEAST ONE GAME OUTCOME IN RESPONSE TO A WAGER AND A DOCKING MECHANISM FOR RELEASABLY INTERCONNECTING THE GAMING CO
A DOOR MONITORING SYSTEM FOR A GAMING DEVICE THAT INCLUDES A LOW POWER OSCILLATOR COUPLED TO A SET INPUT OF AN S/R LATCH AND A SWITCH CONNECTED TO GROUND AT ONE END AND ELECTRICALLY COUPLED BETWEEN THE OSCILLATOR AND SET INPUT AT A SECOND END
A GAME OF CHANCE FOR A GAMING MACHINE THAT INCLUDES A MAZE-BASED BONUS GAME INCLUDING AN INDICATOR AND CONSUMABLE ELEMENTS WHEREIN THE INDICATOR CONSUMES THE ELEMENTS IN RESPONSE TO MANUAL CONTROL BY A PLAYER
A GAME OF CHANCE FOR A GAMING MACHINE THAT INCLUDES A MAZE-BASED BONUS GAME INCLUDING AN INDICATOR AND CONSUMABLE ELEMENTS WHEREIN THE INDICATOR CONSUMES THE ELEMENTS WHEREIN THE PROCESSOR ENTIRELY DETERMINES MOVEMENT OF THE BONUS GENERATING INDICATOR
INCLUDE
EXCLUDE
INTERNET

FIG. 9A


MINING - MICROSOFT INTERNET EXPLORER
FILE | ADDRESS HTTP://WWW.CLAIMMAPPER.COM/CLAIMMAPPER_STAGING/FACES/MININGPA
PROJECTS PATENTS MINING
VERSION 0.78
LOGOUT
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MINING
PROJECT EDIT DETAILS PATENTS PATENT RANKINGS PROJECTS LIST
TITLE WMS GAMING
STATUS OPEN
LAST MODIFIED APR 11,2005
CONCEPTS COMPONENTS CONSTRAINTS PATENTS
UNRESOLVED 22 CLAIM(S) IN 7 PATENT(S)
UPDATE
NAME
MARK
ANIMATRONIC FIGURE
AUDIO FILE
AUDIO SEQUENCE
CABINET
CONTROLLER
GAMING MACHINE
HOLDING DEVICE
MARKER
MEMORY STRUCTURE
INCLUDE
EXCLUDE
DONE
INTERNET
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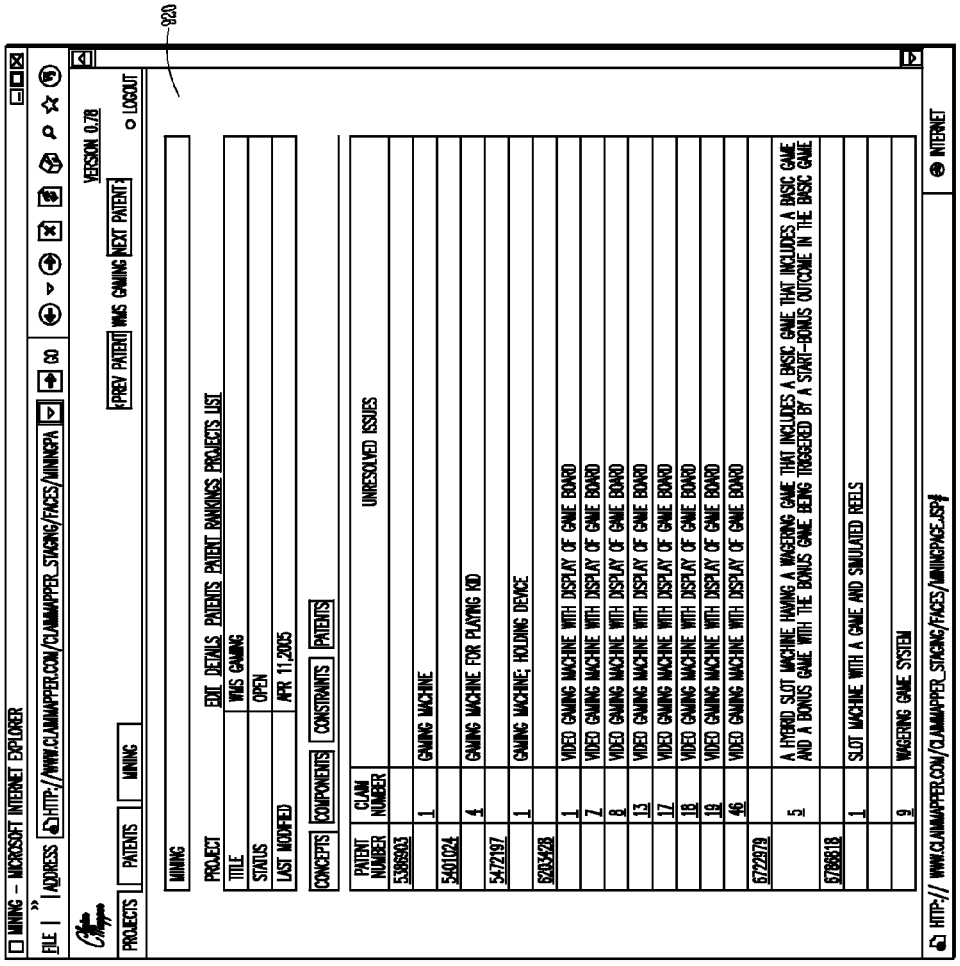
908
909
904
902
910

FIG. 9B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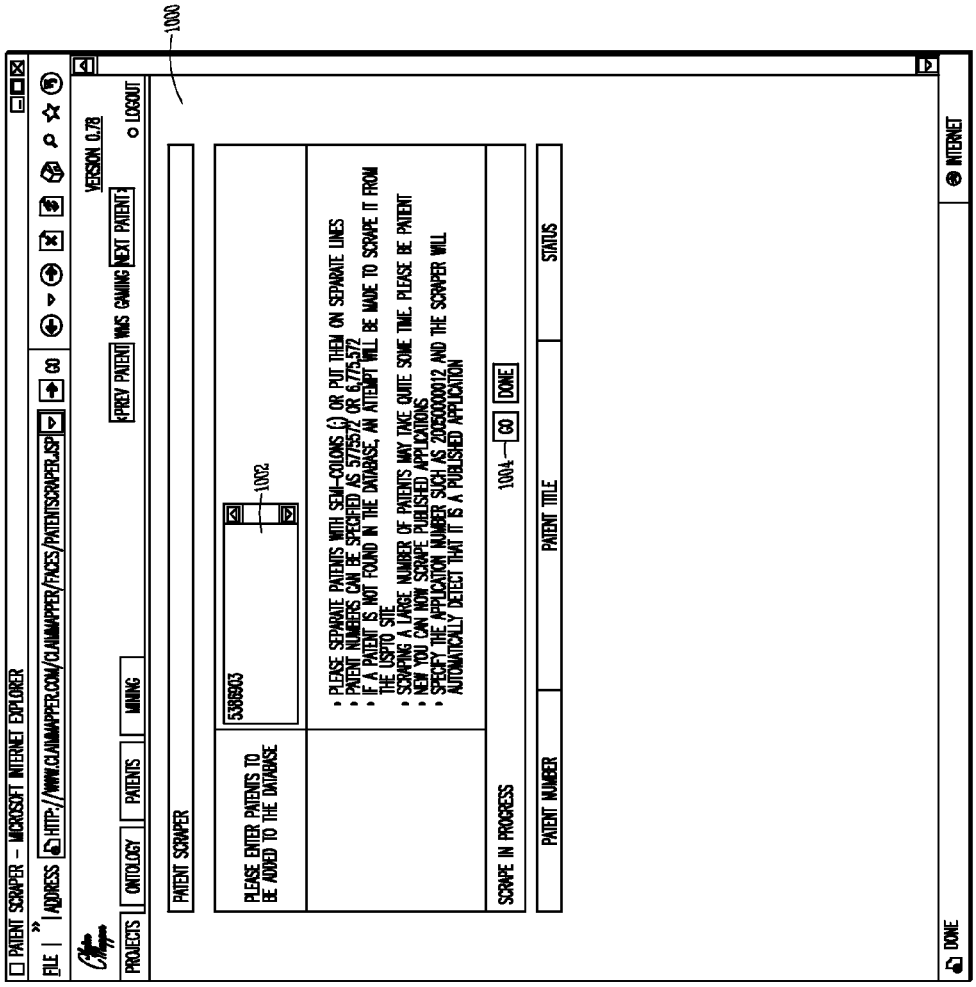
MINING - MICROSOFT INTERNET EXPLORER
FILE | ADDRESS HTTP://WWW.CLAIMMAPPER.COM/CLAIMMAPPER_STAGING/FACES/MININGPA
PROJECTS PATENTS MINING
VERSION 0.78
LOGOUT
PREV PATENT WMS GAMING NEXT PATENT
MINING
PROJECT EDIT DETAILS PATENTS PATENT RANKINGS PROJECTS LIST
TITLE WMS GAMING
STATUS OPEN
LAST MODIFIED APR 11,2005
CONCEPTS COMPONENTS CONSTRAINTS PATENTS
PATENT NUMBER
CLAIM NUMBER
UNRESOLVED ISSUES
5308903
1 GAMING MACHINE
5401024
4 GAMING MACHINE FOR PLAYING MD
5472197
1 GAMING MACHINE; HOLDING DEVICE
6203428
1 VIDEO GAMING MACHINE WITH DISPLAY OF GAME BOARD
7 VIDEO GAMING MACHINE WITH DISPLAY OF GAME BOARD
8 VIDEO GAMING MACHINE WITH DISPLAY OF GAME BOARD
13 VIDEO GAMING MACHINE WITH DISPLAY OF GAME BOARD
17 VIDEO GAMING MACHINE WITH DISPLAY OF GAME BOARD
18 VIDEO GAMING MACHINE WITH DISPLAY OF GAME BOARD
19 VIDEO GAMING MACHINE WITH DISPLAY OF GAME BOARD
46 VIDEO GAMING MACHINE WITH DISPLAY OF GAME BOARD
6722979
5 A HYBRID SLOT MACHINE HAVING A WAGERING GAME THAT INCLUDES A BASIC GAME AND A BONUS GAME WITH THE BONUS GAME BEING TRIGGERED BY A START-BONUS OUTCOME IN THE BASIC GAME
6786818
1 SLOT MACHINE WITH A GAME AND SIMULATED REELS
9 WAGERING GAME SYSTEM
HTTP:// WWW.CLAIMMAPPER.COM/CLAIMMAPPER_STAGING/FACES/MININGPAGE.JSP#
INTERNET

FIG. 9C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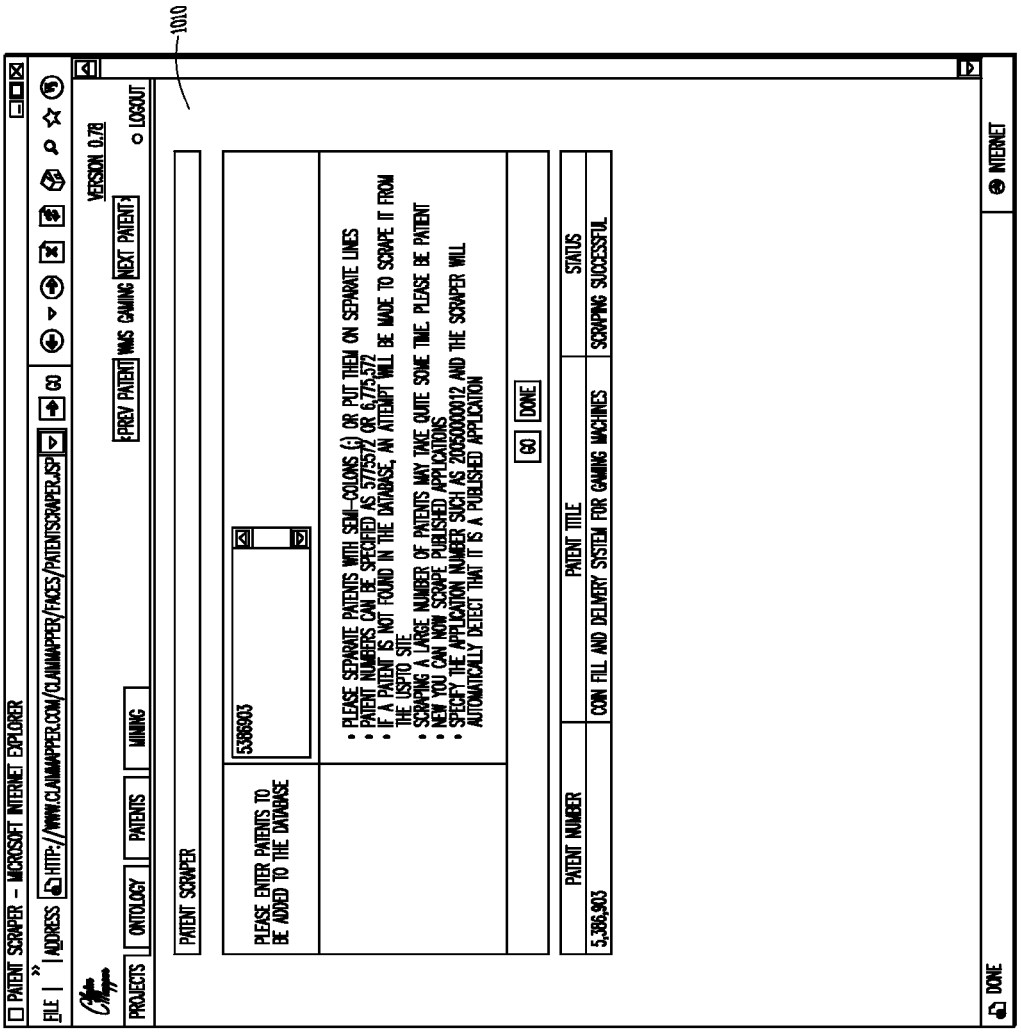
VERSION 0.78
PROJECTS ONTOLOGY PATENTS MINING
<PREV PATENT MAS GAMING NEXT PATENT> LOGOUT
PATENT SCRAPER
PLEASE ENTER PATENTS TO BE ADDED TO THE DATABASE
5308903
1002
• PLEASE SEPARATE PATENTS WITH SEMI-COLONS (;) OR PUT THEM ON SEPARATE LINES
• PATENT NUMBERS CAN BE SPECIFIED AS 5776577 OR 6,776,572
• IF A PATENT IS NOT FOUND IN THE DATABASE, AN ATTEMPT WILL BE MADE TO SCRAPE IT FROM THE USPTO SITE
• SCRAPING A LARGE NUMBER OF PATENTS MAY TAKE QUITE SOME TIME. PLEASE BE PATIENT
• NEW YOU CAN NOW SCRAPE PUBLISHED APPLICATIONS
• SPECIFY THE APPLICATION NUMBER SUCH AS 20050000012 AND THE SCRAPER WILL AUTOMATICALLY DETECT THAT IT IS A PUBLISHED APPLICATION
SCRAPE IN PROGRESS
1004
GO
DONE
PATENT NUMBER
PATENT TITLE
STATUS
DONE
INTERNET

FIG. 10A


1010
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PROJECTS ONTOLOGY PATENTS MINING
VERSION 0.78
PREV PATENT NMS GAMING NEXT PATENT LOGOUT
PATENT SCRAPER
PLEASE ENTER PATENTS TO BE ADDED TO THE DATABASE
5386903
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• PATENT NUMBERS CAN BE SPECIFIED AS 5775572 OR 6,775,572
• IF A PATENT IS NOT FOUND IN THE DATABASE, AN ATTEMPT WILL BE MADE TO SCRAPE IT FROM THE USPTO SITE
• SCRAPING A LARGE NUMBER OF PATENTS MAY TAKE QUITE SOME TIME. PLEASE BE PATIENT
• NEW YOU CAN NOW SCRAPE PUBLISHED APPLICATIONS
• SPECIFY THE APPLICATION NUMBER SUCH AS 20050000012 AND THE SCRAPER WILL AUTOMATICALLY DETECT THAT IT IS A PUBLISHED APPLICATION
GO DONE
PATENT NUMBER
PATENT TITLE
STATUS
5,386,903
COIN FILL AND DELIVERY SYSTEM FOR GAMING MACHINES
SCRAPING SUCCESSFUL
DONE
INTERNET

FIG. 10B

PATENT MAPPING

RELATED APPLICATIONS

This application is related and claims priority to and is a continuation U.S. patent application Ser. No. 11/494,278 and issued as U.S. Pat. No. 8,161,025 B2, entitled "Patent Mapping," by Steven W. Lundberg, Janal M. Kalis, and Pradeep Sinha, filed Jul. 27, 2006 which is incorporated herein by reference and is related to further applications, to which priority is claimed, as follows: This application is also related to and claims the priority of U.S. Provisional Patent Application Ser. No. 60/703,413, entitled "Patent Mapping," by Steven W. Lundberg, Janal M. Kalis, and Pradeep Sinha, filed Jul. 27, 2005, which is incorporated herein by reference; and is further related to U.S. patent application Ser. No. 10/710,656, entitled "Patent Mapping," by Steven W. Lundberg, Janal M. Kalis, and Pradeep Sinha, filed Jul. 27, 2004 which is incorporated herein by reference and corresponding PCT application PCT/US2005/026768 filed Jul. 27, 2005; and U.S. patent application Ser. No. 10/910,265, entitled "Patent Mapping," by Steven W. Lundberg, Janal M. Kalis, and Pradeep Sinha, filed Aug. 10, 2004 which is incorporated herein by reference.

FIELD

This application relates to patent mapping and more particularly to systems, software, methods and data structures for patent mapping.

BACKGROUND

Tools for identifying patents for a particular purpose such as a prior art search, validity analysis, or a freedom to operate investigation, operate by performing Boolean queries using various search operators. These operators allow for searching by date, terms, document number, and patent classification, among others. These tools further allow for searching individual document portions such as a document title, abstract, or claim set.

Other searching tools accept freeform text. Such tools accept a freeform text block and extract information from the text block deemed most likely to return acceptable results. However, such tools are still limited to only performing Boolean queries and displaying a list of results.

These search tools often provide large numbers of results, most of which are irrelevant. These tools fail to present results in a manner allowing for quick relevancy determinations. The presentation also fails to provide enough detail suggesting how to adjust a search for obtaining only relevant results. Further, the search tools provide the documents of the result set in a manner very similar to the traditional paper format of the documents.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a functional block diagram of one example embodiment.

FIG. **2** is a system schematic diagram of one example embodiment.

FIG. **3** is a method flow diagram of one example embodiment.

FIG. **4** is a method flow diagram of one example embodiment.

FIG. **5** is a method flow diagram of one example embodiment.

FIG. **6** is a method flow diagram of one example embodiment.

FIG. **7**A-FIG. **7**G illustrate user interfaces of example embodiments.

FIG. **8**A-FIG. **8**C illustrate user interfaces of example embodiments.

FIG. **9**A-FIG. **9**C illustrate user interfaces of example embodiments.

FIG. **10**A-FIG. **10**B illustrate user interfaces of example embodiments.

DESCRIPTION

The subject matter herein provides systems, software, methods, and data structures for patent mapping, searching, and display to quicken analysis of patent documents for virtually any purpose. Various example embodiments of the described subject matter assist practitioners in producing higher quality work product by reducing irrelevant search results, leaving more time and money to focus on the more important analysis. Some further embodiments assist in analysis by interweaving patent documents and linking various portions of individual patent documents with other portions of the same document. Yet further embodiments assist in analyzing patent documents by identifying similarities and differences between one or more patent documents or portions thereof.

In the following detailed description, reference is made to the accompanying drawings that form a part hereof, and in which are shown by way of illustration specific embodiments in which the inventive subject matter can be practiced. It is understood that other embodiments may be utilized and structural changes may be made without departing from the scope of the present invention.

The leading digit(s) of reference numbers appearing in the Figures generally corresponds to the Figure number in which that component is first introduced, such that the same reference number is used throughout to refer to an identical component which appears in multiple Figures. Signals and connections may be referred to by the same reference number or label, and the actual meaning will be clear from its use in the context of the description.

The subject matter herein, in one example embodiment is useful to conduct a patent clearance study to clear a large number of components and assemblies of interest or other subject matter and technology that may be subject to patent protection in one or more countries. Such a large scale clearance project presents a number of challenges and opportunities.

When performing such a study of a large number of patent documents, such as United States and foreign patents and patent applications, the same patent documents need to be screened many times against a wide range of assemblies and components. This can lead to considerable wasted effort unless a well structured approach is taken. Further, the sheer volume of the work creates a special incentive to devise a triage system of review, wherein as much of the work as possible can be done by the least expensive resources. Efficient methodologies of review can be implemented using the present subject matter to not only produce relevant results, but also to control cost.

Projects, such as patent clearance studies, often do not capture knowledge that can be re-used as a resource at a later point in time either within the parameters of the clearance study or for other purposes. Some embodiments provide a process and system that retains at least some of the knowledge gained through the study, in an accessible manner.

In the present example embodiment, a pool of patent documents to be mapped and screened is identified using various techniques. Some such techniques include identifying patent documents by assignee, patent class, keyword searches, inventor information such as name or city and state of residence, title, or other information within patent documents or other source of data related to patent documents. New patent documents can be added or subtracted from this pool while mapping is in progress, or at a later date when the patent pool or clearance study is updated.

In some embodiments, depending on the requirements of a patent clearance study, at least the independent claims of each patent document within the identified patent pool will be mapped using a computer system and software operating on the system. In some embodiments, the mapping includes assigning a reusable concept to a patent claim as a whole, termed the "claim concept," the claim concept being broad enough to encompass the broadest possible reading of the claim. For example, if the claim is directed to a dog with a red tail, the claim concept may be "dog," or a mapper may assign it to the claim concept "animal," depending on preferences, experience, breadth of the clearance study, or requirements. Further concepts may be mapped to claim elements or limitations. These concepts are termed "limitation concepts," and, in essence, define limits on the scope of the claim concept(s) assigned to a claim as a whole. For example, the limitation concept "red tail" may be mapped to the example claim. Or, the claim directed to a dog with a red tail may be mapped to both claim concepts "dog" and "animal," and a further concept "tail."

Further, claim concepts, or limitation concepts, may be arranged or structured in a hierarchical fashion, with multiple levels. For instance, the claim concept "dog" may be structured as a sub-concept of "animal." "Red tail" may be structured as a sub-concept of "tail."

In some embodiments, after the claim is mapped to one or more claim concepts, the limiting elements are mapped. These limitations are found in the preamble and/or body of claim. First, limitations of interest in the claim are identified. In some embodiments, not all limitations need be mapped. Limitations of interest may be highlighted, or otherwise selected or annotated. The highlighted limitations are then mapped, or associated, with one or more reusable limitation concepts kept in a concept catalog or index or other data structure. The catalog may also contain reusable claim concepts. If the catalog does not contain a suitable limitation concept to map to, a new limitation concept is added to the catalog "on the fly" or at a later time. Periodically the catalog is reviewed and similar claim or limitation concepts are merged together when possible to limit the size of the concept catalog. In some embodiments, a patent claim with one or two particularly narrow limitations may only require mapping of the one or two limitations to corresponding limitation concepts, in order to capture the most salient information concerning the claim's scope.

Within any given patent document there are often many claims with similar limitations. Once a claim is mapped in a given patent, the mapping software may analyze each successive claim chosen for mapping and suggest mappings based on the way the previous claim(s) in the patent document have been mapped. Automated suggestions may also be made using mappings established for claims in other patent documents. Using this tool, mapping is both greatly accelerated and also made more uniform. In some embodiments, suggested mappings are provided to a user via a user interface to approve, modify and approve, or delete.

In some embodiments, a screening tool is used to rule out patent documents that are not of interest to a target subject matter. A target subject matter to be screened, in various embodiments, includes any patentable subject matter, such as a method, apparatus, or composition of matter, whether actual or hypothetical. In some embodiments, the process of using the screening tool includes opening a screening activity data structure and identifying a target subject matter to be screened, for example, by typing in a description of the subject matter into a field or alternatively picking it from a preexisting list. A pool of patent documents to screen is also assembled or identified. Patent documents to be screened may be added to the pool based on such search criteria as one or more of assignee, patent classification, keyword, inventor or other data identifiable in a patent document, or by any other selection criteria. All these methods or others may be used to identify a pool of patent documents to screen the target subject matter against. Alternatively, in addition, one or more claim concepts in the catalog may be identified, such that the identified claim concepts are broad enough to cover the target subject matter. The one or more claim concepts may be used to create a pool of limitation concepts to be screened, wherein the claims mapped to these concepts are added to the pool. If claims are identified for screening based on a claim concept, then the parent patent document containing the identified claims may also be added to the pool. Alternatively, the pool may be formed only of claims to be screened and not necessarily every claim of any patent that has a claim in the pool.

The following embodiment assumes that a pool of patent documents is initially assembled for screening and in turn the pool of claims to be screened belong to these patent documents. The claim concepts or limitation concepts associated with the identified pool of patents (and associated claims to which the concepts are mapped) to be screened are assembled into a concept pool for use in screening the patent documents in view of the target subject matter. A screener then reviews the concepts in the concept pool, ruling out any concepts that are not found in the target subject matter. Concepts may be marked as "definitely not in target subject matter", "maybe in target subject matter", or "don't know." If a concept is marked "definitely not found in target subject matter", then any claim mapped to that concept may be ruled out. If desired, in a software implementation, multiple concepts may be required to be ruled "definitely not found" for any given claim to be ruled out.

In order to speed screening, the concepts in the pool being mapped may be reduced as follows. Once a concept is marked "definitely not in target subject matter", the screening software rules out all claims that are mapped to the eliminated concept. Any concepts that are solely mapped to the ruled out claims may then be marked "removed from consideration." Some embodiments also include annotating ruled out claims or concepts as to why the claims or concepts ruled out were removed (e.g., which claim was ruled out to eliminate them). This annotating is in a data structure related to the concept as it applies to the particular target subject matter being analyzed. In some such embodiments, annotations are stored in manner such that subsequent viewing of the annotation is restricted to a limited number of viewers, such as the author or members of the author's workgroup. Using this process, the pool of concepts to be reviewed is reduced both by the action of ruling out concepts and by the corresponding elimination of concepts removed from consideration. In one embodiment, claim concepts may be the first concepts screened, allowing for a "high level" elimination of claims. For example, if the claim concept "dog" is ruled out, then all claims mapped to

this claim concept may be ruled out. In turn, all limitation concepts mapped solely to ruled out claims are also eliminated from consideration.

In some embodiments, once all concepts in the concept pool are reviewed, there are assorted outputs that are preferably kept in a data structure. The first output includes a record of the screening. The record of the screening includes marking each concept with a status, such as: "definitely not in target subject matter", "maybe in target subject matter", "don't know", or "removed from consideration." This record can be revisited, reviewed, or edited. The second output includes a list of claims that are not applicable to the target subject matter. For example, any claim ruled out is added to the list of claims that are not applicable to the subject of the target subject matter. This list flows from the status of each concept and in turn the claims the concept belongs to. The third output includes a list of patent documents that are not applicable to the target subject matter. Any patent document with all claims ruled out is added to this list of non-applicable patent documents. This list flows from the status of each claim within a parent patent. The third output includes a list of all claims that are not definitively ruled out in the screening process. The fourth output is a list of patent documents or claims not ruled out. This is a list of all patent documents that are not definitively ruled out in the screening process. There may also be a list of claims removed from consideration. These outputs may be presented as paper reports or as on-line reports, automatically generated emails or other electronic message type, or displays which allow a user to drill through the eliminated concepts, claims or patent documents, or to view the supporting patent specification or portions thereof for a ruled out or ruled in patent document.

Another output is specific to a patent or a family or other groups of patents. This output may be an index to the mapped claims in the patent or group. For instance, the index may list all mapped claim concepts and/or limitation concepts with applicable claim numbers indicated for each concept. Concepts appearing in all claims may be highlighted. Another output may be a hierarchy chart or diagram showing concept/sub-concept relationships. These outputs may be paper or online with interactive hyper-links to claims.

In some embodiments, mapping of patent documents and claims is semi-automated. In addition, mapping personnel can be trained to identify esoteric or narrow limitations in claims and map only those limitations. This reduces mapping time for inherently narrow patent claims. To screen out possibly applicable patent documents, the process only requires that limitations be mapped to a concept that is at least as broad as the limitation. It is not problematic that the mapping is to an overbroad concept because the screening process is intended only to eliminate patents or claims from consideration and not to positively identify patents that are infringed. Thus, these types of "false positives" are not a problem when using the tool, as the false positives can be ruled out by further review or study.

Screening can also be accomplished in reverse. That is, concepts applicable to the target subject matter can be identified as "present" or "maybe present." This process will identify potential claims that cover the target subject matter. However, this process would ideally require that all limitations in a claim be mapped accurately to concepts so as to not include a multitude of false positives or possibly false negatives.

In some embodiments, the software and systems are web-based and accessible with a user name and password. Subscribers to such systems and software may receive a license to use the software for an individual project, a period of time, or on a pay-per-access or pay-per-unit of time basis.

FIG. **1** shows a functional block diagram of one example embodiment. This example embodiment illustrates software **100** for mapping and searching for patent documents. In some embodiments, the patent documents include one or both of patents and published patent applications. In some embodiments, the patent documents include United States patent documents, while other embodiments include international patent documents. The software **100** for mapping these patent documents includes a mapping unit **102**, a data unit **104**, a searching unit **106**, and a search storage unit **108**.

In some embodiments of the software **100**, the mapping unit **104**, the searching unit **106**, and the search storage unit **108** work with associations of data between various portions of patent documents. Some such associations include two limitation concepts associated with a concept that defines a relationship between limitation concepts, termed "relational concept." An example of such an association is, "A dog wags its tail." The two limitation concepts are "dog" and "tail." The relational concept is "wags." Some patent claims may contain many of such associations. For example, "A dog wags its tail that is brown." The first association is the same as before. The second association is between limitation concepts "tail" and "brown." The second relational concept is "is." "Is" in this context equates to "has color."

In one embodiment, any type of concept may have an associated definition. For instance, dog may be defined as a "canine species having four legs." As mentioned above, some claim concepts may be designated subordinate to other claim concepts, such as a processor concept that is subordinated to the concept of computers. In addition, a limitation concept may be designated as a subordinate concept to a claim concept or another limitation concept, for example, in a hierarchy. In some such embodiments, a subordinate concept can be designated as an inherent property of a concept. For instance, the limitation concept "head" may be designated an inherent property of "dog." In other embodiments, a concept definition includes various properties of the concept that are inherent, such as a personal computer concept having an inherent property of a housing encasing a number of components. Other embodiments include concepts that are descriptive or actions such as "storing data" or "electronic funds transfer." The "storing data" example might include a definition that encompasses databases, storage devices, or storage media. The "electronic funds transfer" might encompass banking, money, network, transfer, Federal Reserve, or EFS. Some embodiments of concept definitions include a glossary of words useful in identifying the concept.

In some embodiments, the mapping unit **102** operates to paraphrase one or more portions of patent claim elements or limitations, and map the paraphrase to a concept. In some embodiments, the paraphrased portion is a general idea derived from a claim that is implicit to the claim, but not explicitly stated in the claim. This paraphrasing in various embodiments includes mapping one or more concepts to a claim. In some such embodiments, a limitation concept is mapped to one or more claim limitations or elements. The mapping unit **102** then stores mapped patent documents and/or claims in the data unit **104**. In some embodiments, a mapping utility is included in the mapping unit **102**. This mapping utility extracts language from an unmapped patent claim and compares the extracted language against concept definitions and previously mapped patent claims to determine a likely mapping. In some such embodiments, the mapping utility makes a mapping recommendation through a user interface.

In other embodiments, the utility operates in a batch mode and automatically maps patent claims.

In some embodiments, the data unit **104** operates to store output from the mapping unit **102** and provide data to the searching screening unit **106**. The data unit **104** also stores data received from the search storage unit **108** and serves data to the search storage unit **108** when requested. In one such embodiment, the data unit **104** includes a database management system (DBMS) for storing and retrieving data. In some embodiments, the DBMS is a relational database management system (RDBMS). In some other embodiments, the data unit **104** includes storing data in a Resource Description Framework Schema (RDFS). In some embodiments, the various units communicate with the data unit **104** using a language such as Structured Query Language (SQL) or eXtensible Markup Language (XML).

The searching unit **106** includes tools for extracting patent data in a useful manner from the data unit **104**. In some embodiments, the starting point for searching is the entire universe of patent documents in the data unit **104**. Documents in this universe, or pool, are eliminated based on input by a searcher. In some embodiments, this input includes eliminating concepts from consideration. In some embodiments, when concepts are eliminated, patent claims or documents containing solely eliminated concepts are removed from the universe.

The storage unit **108** performs functions for storing and retrieving search results obtained by the screening unit **106** in the data unit **104**. In some embodiments, storing the search results includes storing various parameters used in search including eliminated concepts, or even a list of specific documents excluded from a search. In other embodiments, a listing of identified patent documents is stored. Some such embodiments also store search parameters such as eliminated concepts.

FIG. **2** shows a schematic diagram of a system **200** according to one example embodiment. The system **200** includes a processor **202** and a memory **204** holding the software **100** (as shown in FIG. **1**). Some embodiments of the system **200** include an optional network interface **206** for accessing a network during execution of the software **100**. In some such networked embodiments, the system is a client/server system where various portions of the software **100** are distributed across a network for performing various tasks required by the software. In some other networked embodiments, the system is a web-based system with software distributed across a network, such as a local or wide area network, an intranet, or the Internet, with various portions of the software distributed across the network. In some such web-based systems, a client computer causes the software **100** to execute through interaction with the software **100** through a client user process such as a web browser.

In some embodiments, the processor **202** represents a central processing unit (CPU) of any type of architecture, such as a CISC (Complex Instruction Set Computing), RISC (Reduced Instruction Set Computing), VLIW (Very Long Instruction Word), or hybrid architecture, although any appropriate processor may be used. The processor **202** executes instructions, such as instructions contained within the software **100**. In some other embodiments, the processor is a graphics processor on a video card. The processor **202** in these embodiments also includes a control unit that organizes data and program storage in memory **204** and transfers data and other information in and out of the system **200** and to and from a network over the network interface **206** and other devices attached to the network. Although the system **200** is shown to contain only a single processor **202**, the present subject matter applies equally to systems **200** that include multiple processors **202** such as multiple CPUs, multiple graphics processors, and combinations of CPU and graphics processors.

The memory **204** of the system **200** holds the software **100** as illustrated in FIG. **1**. The memory **204** represents one or more mechanisms for storing data. For example, the memory **204**, in various embodiments, includes read only memory (ROM), random access memory (RAM), magnetic disk storage media, optical storage media, flash memory devices, and/or other volatile and non-volatile machine-readable media. In other embodiments, any appropriate type of storage device or memory **204** can be used. Although only one memory **204** is shown, multiple memories **204** and multiple types of storage devices can be present. In various embodiments, some or all of the software **100**, or other items, can be stored on the same or on different memory **204** or storage devices. Furthermore, although the system **200** is drawn to contain the memory **204**, the memory **204** or other storage device can be distributed across other systems **200** or computing devices operatively coupled to the system **200** over the network interface **206** such as by a network or other wired or wireless communication link such as a network.

FIG. **3** is a method **300** flow diagram of one example embodiment. The method **300** of this embodiment includes selecting a patent claim **302**, associating the patent claim to a claim concept **304**, and associating the elements of the claim to one or more limitation concepts **306**. Selecting a patent claim **302** includes selecting a claim from a patent document for mapping.

Associating the patent claim to a claim concept **304** includes assigning a concept designation to the claim as a whole. In other words, the claim concept will ideally have a scope that is at least as broad or broader than the scope of subject matter covered by the claim. Some embodiments provide the ability to assign multiple claim concepts to a claim. Associating a limitation concept to a portion or element of the patent claim **306** includes assigning the limitation concept to a portion of the claim such as a single limitation, a phrase, an element, an individual word within the claim, or a paraphrasing of the scope of one or more these portions. For example, consider a claim including the limitation, "a dog having a tail." The claim as a whole could be assigned to a claim concept "mammal" or "canine." The word "tail" could be assigned to a limitation concept "body part" or "appendage" or simply "tail." It is not necessary, in alternate embodiments, that both claim concepts and limitation concepts be mapped. One or the other could suffice to permit screening. As a further example, the claim as a whole could be assigned to a claim concept "dog," wherein a definition of the concept dog includes a tail. Further, if the claim as a whole is assigned to the claim concept "dog," the claim may automatically assigned to parent concepts "canine" and "mammal" and a child concept "tail."

The results of the associating **304** and **306** are stored to provide search users of a system, such as system **200** of FIG. **2**, the ability to not only search for patent claims by concept, but also to screen patent claims by concept. Some such embodiments provide searchers the ability to pin point specific claims and claim language of interest or concern when performing a screen as part of a freedom to operate opinion.

Some further embodiments of the method **300** include associating a portion of the patent document, such as a portion of a description section of a patent, patent application, or other document, to a claim. Such an assigned portion, in some embodiments, is a portion of the description providing support for the patent claim, or element thereof. In some embodi-

ments, the assigned portion can be a portion of another document, such as a treatise generally accepted by one of skill in the relevant art. Some embodiments include associating one or more sentences of a description section to an individual claim element. This association information is stored to allow mappers or screeners quick reference to support and explanation of the various patent claims and claim elements in the patent documents when mapping or screening.

FIG. **4** is a method **400** flow diagram of one example embodiment. The method of this embodiment includes maintaining a database of concepts **402**. The method **400** further includes maintaining a database of mapped patent claims, each claim including at least mapping to a concept **404**. In other embodiments, a claim may only be assigned to a single claim concept and no elements or limitations in the claim are mapped. Or, a claim element may be mapped to a single limitation concept, and the claim as a whole not being mapped to a claim concept. Some such embodiments may further provide that the mapped elements being non-inherent elements of the mapped concept. For instance, if the claim concept is dog, inherent elements such as legs or head are not mapped to limitation concepts, as it is assumed that such elements have to be implicitly or explicitly present in the claim in order for it to be assigned to the claim concept dog. In some embodiments, the mapped patent claims include independent claims and not dependent claims.

FIG. **5** is a method **500** flow diagram of one example embodiment for assisted patent mapping. The method **500** of this embodiment includes comparing patent claim language with language of mapped patent claims **502** and suggesting a mapping for the patent claim language based on the comparing **504**. In some other embodiments, the claim language is mapped according to a concept schema. In such embodiments, the claim language is compared against and mapped according to concept definitions. In some further embodiments, claim language is compared against both concept definitions and previously mapped claim language.

FIG. **6** is a method **600** flow diagram of one example embodiment for screening a universe or pool of patent documents. This pool may be arbitrarily selected from the available universe of mapped claims or patent documents. The method **600** includes generating a list of first claim or limitation concepts contained in the universe of patent claims **602** and eliminating irrelevant concepts **604**. This embodiment further includes generating a list of remaining first concepts showing relationships, where applicable, between them **606** and eliminating irrelevant related concepts **608**.

In some embodiments of the method **600**, first concepts associated solely with eliminated relational concepts are eliminated upon elimination of the relational concept.

FIG. **7**A-FIG. **7**G illustrate user interfaces **700** of one example embodiment. The user interface **700** of FIG. **7**A includes a hyperlinked listing of projects within a system. Selection of a project causes the user interface **710** of FIG. **7**B to display.

The user interface **710** of FIG. **7**B includes a listing of patents and patent applications included within the selected project. The listing of patent and application numbers are hyperlinked to further details within the system regarding the respective patents and applications. Some embodiments, including the embodiment of FIG. **7**B, include the functionality to rank patents and applications within a project. The ranking allows users to rank the various documents, such as by relevance to the particular project.

The user interface **720** of FIG. **7**C provides claim details of a patent or patent application, such as claim language and an indication if the claim is independent or dependent. The user interface **720** further provides hyperlinks to other information regarding the patent or patent application displayed in the user interface **720** such as cross references to other project and patent information, drawings of the patent or patent application, information regarding a patent family of which the displayed patent or patent application is a member of, and other user interfaces within the system, such as the user interface **730** illustrated in FIG. **7**D.

The user interface **730** of FIG. **7**D provides further information about claims of a particular patent or patent application. This information includes claim dependencies and concepts, classes, components, and constraints to which each claim is related or pertains to. The user interface **730** further includes links to other user interfaces of the system similar to the other user interfaces described herein.

User interface **740** of FIG. **7**E is another user interface within the example system. The user interface **740** includes a claim map of limitations to claims. Such claim maps provide graphical view of limitations within claims of a patent or patent application. This allows a user to quickly comprehend relationships between claims in a patent. In some embodiments, a claim map can include claims of one or more patents or patent applications to provide a graphical representation of related claims. Such maps can include maps of patent families and can illustrate the relationship of claim limitations within a patent family. These maps con include independent claims, dependent claims, or both.

FIG. **7**F illustrates a further user interface **750** illustrating another mapping of a set of claims **1-12**. This map illustrates two concepts and an indication **752** of which claims include which concepts. This mapping can further indicate components and constraints that are included in the claims. Although the terms property, concept, component, and constraint are used in describing this and other embodiments, these terms are merely exemplary. Other terms can be used to describe various claim elements, sub-elements, high and low-level concepts, and subject matter contained within claims without departing from the present subject matter herein. These terms are merely labels of a hierarchy of claims and claim portions.

FIG. **7**G provides yet another user interface **760** of one example embodiment. This user interface **760** provides a map of an individual claim. The user interface **760** includes all, or a portion, of the claim text **762** and a mapping **764** of the claim and its limitations. The mapping **764** includes a property of the claim and limitation values thereof. The mapping **764** can be edited, removed, or otherwise altered or deleted. The user interface **760** also provides a mapping **764** status indicator **766**. The mapping **764** status can include none, partial, or complete.

The various user interfaces of FIG. **7**A-**7**G present information to users about patent claims. Each user interface provides the claim information in a slightly different manner and with varying detail to allow users to view, create, edit, and delete data depending on various user needs.

The claim mapping device is scalable in that it is usable for both mapping of claims in a single patent, a small group of patents, a large portfolio of patents and patents in a technology area. FIGS. **7**A to **7**G illustrate claim mapping screens for performing mapping on claims in a single patent. The mapping screens create a report on features of the patent, such as title and issuance date and inventors. The mapping report also includes features of the claims such as common elements within the claims. Users may identify concepts using the claim language itself or using an ontology developed by the users themselves. Thus, the claim mapping device described herein is useful for creating a local ontology, useful for analyzing claims in a single patent.

The claim mapping device is also usable for mapping claims in a small collection of patents, such as patents of a particular inventor or patents asserted in a litigation matter. In this instance, users also create an ontology for describing concepts and components of the claims, which has local application to the collection of claims under consideration. In particular, the ontology may include concepts and components which are pertinent to the claims being analyzed but may not include all of the concepts and components that are parts of a larger art group or technology area.

The claim mapping device also has use in global mapping of patent portfolios or all patents within a particular art or technology area. In this embodiment, users create an ontology of concepts and components that are usable across a spectrum of claims in many patents. For each claim analyzed, the user selects the concepts and components from the ontology. If the ontology does not have the concept or component, the user adds it. As a result, the ontology is built and expanded for subsequent users. For some embodiments, as ontologies are created, the claim mapping device is capable of automatically mapping at least a portion of claims analyzed.

The claim mapping device is scalable in that it is usable for both mapping of claims in a single patent, a small group of patents, a large portfolio of patents and patents in a technology area.

FIG. **8**A is a user interface **800** of one example embodiment. The user interface **800** provides a text search field **802** to search various documents, such as patents and patent applications, included within an example system. The search field **802** allows users to enter terms to search against the example system database of concepts mapped to claims. The results of such a search are displayed in the user interface **800** by concept name. The user interface **800** further displays a description of displayed claim concepts if such a description exists in the database. The concept names are hyperlinked to allow users to select the concept name to view further information about the concept. An example of further information about the "Gaming Machine" concept **804** is illustrated in FIG. **8**B.

FIG. **8**B illustrates a user interface **810** providing the further information about the "Gaming Machine" concept **804**. The user interface **810** displays sub-concepts of the parent concept "Gaming Machine" **804**. These sub-concepts, such as "Money Handler" **812**, are hyperlinked to provide further information about the sub-concept. Selection of a sub-concept hyperlink, such as "Money Handler" **812**, causes user interface **820** of FIG. **8**C to be displayed. User interface **820** displays further sub-concepts of the selected "Money Handler" **812** sub-concept. The further sub-concepts are also hyperlinked, the selection of which will provide further details of the selection.

FIG. **9**A illustrates a user interface **900** that provides a listing of concepts included within a database of an example system. The user interface **900** is useful to users searching for relevant patents and patent application for purposes such as a clearance search. The user interface **900** allows users review concepts **906** and select to include or exclude the concept from the search. After a user selects concepts **906** to include and exclude from the search, the user can select the "Update" button **902**. Selection of the "Update" button **902** causes a result count **904** to be updated to reflect the number of claims and patents resulting from the concept **906** selections. The user can then select another tab, such as "Components" tab **907**, "Constraints" tab **908**, or "Patents" tab **909**.

Selection of the "Components" tab **907** causes user interface **910** of FIG. **9**B to be displayed. The components **912** included in the display are components that remain in the result set after inclusion and exclusion of concepts selected in the user interface **900** of FIG. **9**A. Returning to FIG. **9**B, the user can then select components **904** to include or exclude from the search. Then the user can select the "Update" tab **902** to update the result count **904**. The user can further reduce the result set reflected in the result count **904** using a constraints user interface that operates in a similar fashion as user interfaces **900** of FIG. **9**A and **910** of FIG. **9**B. The constraints user interface is displayable by selecting the "Constraints" tab **908**.

Once the user has reduced the result set, or at any time, the user can select the "Patents" tab **909**. Selection of the "Patents" tab **909** causes the user interface **920** of FIG. **9**C to display. The user interface **920** displays results of the search as described above with regard to FIG. **9**A and FIG. **9**B. The display of the search results includes identified patent or patent application numbers, identified claim numbers, and unresolved issues within the claims that prevents elimination of the claim from the search. The user can the resolve those issues to determine whether the patent claim is relevant to the purpose of the search. An unresolved issue can include a claim concept, component, or constraint that the user has not chosen to eliminate from the search. If the user decides to further eliminate concepts, components, or constraints from the search, the user can the select the respective tabs to cause the respective user interface to display, from which the search can be further limited.

FIG. **10**A and FIG. **10**B illustrate user interfaces according to example Embodiments. The user interface **1000** of FIG. **10**A provides user the ability to enter one or more patent numbers in a text box **1002** and select action button "Go" **1004**. Selection of the action button "Go" **1004** causes the user interface **1000** to submit the entered patent numbers to an example system which then obtains a copy of the document identified by the patent number and enter the document in the example system database. The example system obtains the copy of the document electronically from another database, such as a patent office database available on the Internet. The example system then parses the electronic document to extract various elements of information such as claims, claim concepts, claim limitations, document title, filing date, classification, descriptive text related to claim terms, concepts, and limitations, and various other elements of information. Once the example system is compete with the parsing, the example system stores the information in a database and cause user interface **1010** of FIG. **10**B to be displayed to the user.

It is understood that the above description is intended to be illustrative, and not restrictive. Many other embodiments will be apparent to those of skill in the art upon reviewing the above description. The scope of the inventive subject matter should, therefore, be determined with reference to the appended claims, along with the full scope of equivalents to which such claims are entitled.

What is claimed is:

1. A method comprising:

assembling, through execution of instructions on a processor of a computing device, a concept pool from claims mapped to concepts in patents of a patent pool, the patents of the patent pool, data representative of the concepts, and mappings of at least the claims of the patents in the patent pool to the concepts stored in a database;

receiving input related to concepts in the concept pool, the input designating at least one concept of the concept pool as irrelevant;

removing a patent from the patent pool based on the received input when the received input designates at least one concept mapped to each claim of the patent as irrelevant; and

wherein:

the data representative of the concepts are organized in a hierarchical manner; and

input received related to concepts in the concept pool that removes a concept higher in the hierarchy of concepts causes associated concepts lower in the hierarchy to be designated as irrelevant.

2. The method of claim **1**, wherein a portion of a claim stored in the database includes a mapping to one or more portions of a document describing the portion of the claim.

3. The method of claim **2**, wherein the document is a patent document in which the claim is present.

4. A system comprising:

at least one processor, at least one memory device, and at least one data storage device;

a database management system that stores and manages patent data, concept data, and mappings of the concept data to the patent data, including mappings of patent claims to concepts represented in the concept data, on the at least one data storage device;

a searching unit held in the at least one memory device and executable by the at least one processor to:

from the data stored and managed by the database management system, assemble a concept pool from patent claims mapped to concepts in patents of a patent pool;

receive input related to concepts in the concept pool, the input designating at least one concept of the concept pool as irrelevant;

removing a patent from the patent pool based on the received input when the received input designates at least one concept mapped to each claim of the patent as irrelevant; and

wherein:

the data representative of the concepts are organized in a hierarchical manner; and

input received related to concepts in the concept pool that removes a concept higher in the hierarchy of concepts causes associated concepts lower in the hierarchy to be designated as irrelevant.

5. The system of claim **4**, wherein a portion of a claim includes a mapping to one or more portions of a document describing the portion of the claim.

6. The system of claim **5**, wherein the document is a patent document in which the claim is present.

7. A non-transitory computer-readable medium, with instructions stored thereon, which when executed by a processor, cause a computer to perform a method comprising:

assembling a concept pool from claims mapped to concepts in patents of a patent pool, the patents of the patent pool, data representative of the concepts, and mappings of at least the claims of the patents in the patent pool to the concepts stored in a database;

receiving input related to concepts in the concept pool, the input designating at least one concept of the concept pool as irrelevant;

removing a patent from the patent pool based on the received input when the received input designates at least one concept mapped to each claim of the patent as irrelevant; and

wherein:

the data representative of the concepts are organized in a hierarchical manner; and

input received related to concepts in the concept pool that removes a concept higher in the hierarchy of concepts causes associated concepts lower in the hierarchy to be designated as irrelevant.

8. The non-transitory computer-readable medium of claim **7**, wherein a portion of a claim stored in the database includes a mapping to one or more portions of a document describing the portion of the claim.

9. The non-transitory computer-readable medium of claim **8**, wherein the document is a patent document in which the claim is present.

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